

**From:** Labiosa, Rochelle  
**To:** Ahmed, Anise (ECY); Cope, Ben  
**Subject:** RE: Salish Sea residence times - shapefile or raster of model output?  
**Date:** Monday, October 29, 2018 5:16:00 PM  
**Attachments:** imaad001.png

Thanks so much for sending the maps - they will be very useful for our project.  
All the best,

Rochelle  
Rochelle Labiosa, Ph.D.  
Office of Water and Watersheds  
US EPA, Region 10  
1200 Sixth Avenue, Suite 155, MC: OWW-191  
Seattle, WA 98101-3140  
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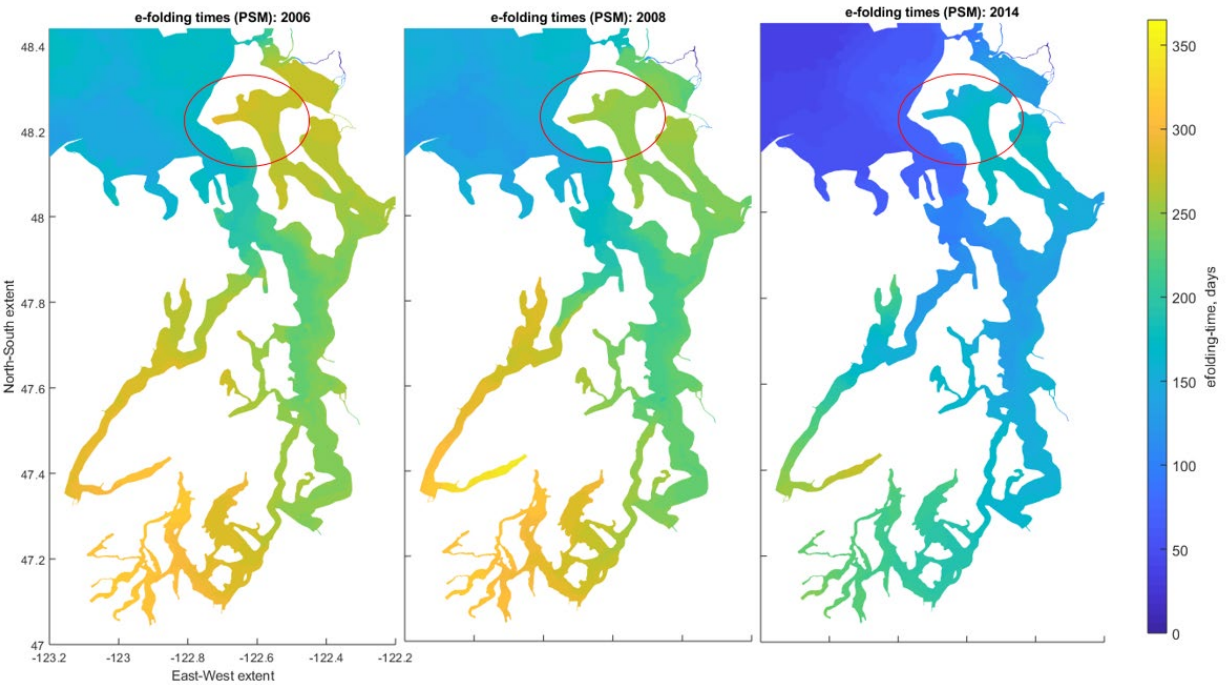
**From:** Ahmed, Anise (ECY) [mailto:AAHM461@ECY.WA.GOV]  
**Sent:** Monday, October 29, 2018 5:12 PM  
**To:** Cope, Ben <Cope.Ben@epa.gov>  
**Cc:** Labiosa, Rochelle <labiosa.rochelle@epa.gov>  
**Subject:** RE: Salish Sea residence times - shapefile or raster of model output?

Hi Ben and Rochelle,  
Sorry it took me long to get back to you. I was contemplating sending you plan view maps of e-folding times for the whole Salish Sea, and that would take time. But, talking with Rochelle made it easier for me as I have some maps that cover only Puget sound and it seems that would suffice. So here it goes. As it turn out Bellingham Bay is not included in these maps. Sorry, Rochelle I thought I had Bellingham Bay on the map.  
Please let me know if you have any questions

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Annual average flows, m <sup>3</sup> /s			
River	2006	2008	2014
Fraser	2364	2750	3185
Skagit	548	515	669
Stillaguamish	135	122	149
Nisqually	62	59	61
Skokomish	57	30	39

PSM: residence times



**From:** Cope, Ben [mailto:Cope.Ben@epa.gov]  
**Sent:** Friday, October 12, 2018 3:50 PM  
**To:** Ahmed, Anise (ECY) <AAHM461@ECY.WA.GOV>  
**Cc:** Labiosa, Rochelle <labiosa.rochelle@epa.gov>  
**Subject:** FW: Salish Sea residence times - shapefile or raster of model output?

Hi Anise –  
I recall you were evaluating residence time using SSM. Please see a question from my colleague Rochelle Labiosa below. Do you think you might have some info that might fit this need? Thanks. -  
BC  
Ben Cope, Environmental Engineer

Office of Environmental Review and Assessment  
EPA Region 10  
206-553-1442

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**From:** Labiosa, Rochelle

**Sent:** Friday, October 12, 2018 3:20 PM

**To:** Cope, Ben <[Cope.Ben@epa.gov](mailto:Cope.Ben@epa.gov)>

**Subject:** Salish Sea residence times - shapefile or raster of model output?

Hi Ben,

We are working on a nutrients project with Lummi Nation, and one question is the representativeness of data from the nation's waters v. other marine sites. We are hoping to be able to access a shapefile or raster of the residence time estimate data for the Salish Sea model - if it exists? Do you know if ecology has it in such a format?

Thanks so much, Rochelle

Rochelle Labiosa, Ph.D.

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